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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/674,962 | 11/08/2000 | Bernhard Hauer | 49041 | 7018 |

26474 7590 07/31/2006

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| EXAMINER |
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WESSENDORF, TERESA D

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| ART UNIT | PAPER NUMBER |
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1639

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,962

Applicant(s)

HAUER ET AL.

Examiner

T. D. Wessendorf

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Board's decision made on 4/28/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

The indicated allowability of claims 5 and 6 is withdrawn in view of the Board of Patent and Appeals decision made on 4/28/2006. Rejections are set forth in the Board's decision at page 8 and reiterated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volz et al (Journal of Chromatography) in view of Guerinot et al (5,846,821) and Haymore et al (EP 409,814).

Volz et al discloses at page 32, col. 2, a peptide fragment of ATPase (1-51) of formula HxHxxxCxxC. A species of this generic peptide fragment is disclosed at page 34, Fig. 2, compound (a), ATPase-439 (1-51). Volz further discloses at page 29, col. 1 that a number of peptides and proteins containing certain motifs of histidine and cysteine residues are known to specifically bind divalent transition metal ions. Typical

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binding sites for Cu^{+2} , Zn^{+2} and Ni^{+2} ions comprise CxxC motifs. Volz also discloses that that the metal binding property of the peptide fragment reside in the presence of the two His and Cys residues. The specific peptide of Volz is encompassed by the generic claimed peptide of Seq. ID. 1 except the peptide fragment of Volz has Leu at position 9 (which corresponds to the claimed position X3 of Seq. ID. No. 1) instead of Ile as claimed. (This is based on X3 being Ile and the other X variables being any of the 20 naturally occurring amino acid residues, as recited.) However, Guerinot discloses at col. 14, line 27 that conservative amino acid residues e.g., Leu and Ile can be substituted with one another, especially in the non-essential positions. Ile is a known homolog of Leu. Haymore, like Guerinot, discloses at page 4, line 12 peptide fragments that are metal binding peptides where the nature of the intervening residues is relatively unimportant. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace Leu in the peptide fragment of Volz with a homologous amino acid, Ile, as taught by Guerinot with a reasonable expectation of obtaining similar metal binding property. Guerinot teaches that Leu and Ile are conservative amino acid residues wherein one can replace the other without the loss of the peptide activity. Haymore,

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Guerinot and Volz all disclose that amino acids in the non-critical or intervening residues between the His and Cys metal binding residues are relatively unimportant in the binding of peptide fragments to metals. One would be motivated to substitute or find a homolog of Leu that are known to function equivalently in a peptide, in a structure-activity study of peptide, to ascertain whether the homologous peptide has an improved property.

The Board pointed out that in the Answer (page 9), the examiner argues that "Volz positively teaches the essential or critical residues for metal ion binding are the His and Cys residues." In this regard, we find that Volz refers to the different metal ion binding regions as "motifs." For example, Volz describes the correspondent peptide as containing a H-X-H-X-X-X-C-X-X-C motif. See, e.g., the abstract. Thus, Volz suggests, and Haymore confirms (p. 4, lines 10-13), that the intervening amino acids denominated as "X" are not critical to the metal binding activity of the peptide. In addition, Haymore states that the intervening residues are not important. Accordingly, the teachings of Volz and Haymore would have suggested that any naturally-occurring amino acid could be used in the H-X-H-X-X-X-C-X-X-C motif. This would include the amino acids recited in claims 5 and 6.

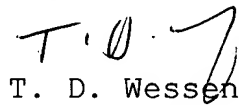
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No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. D. Wessendorf whose telephone number is (571) 272-0812. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on (571) 272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


T. D. Wessendorf
Primary Examiner
Art Unit 1639

Tdw
July 26, 2006